stated that the instrument was a self-recording one, the mode of registration being graphical.) A similar aërial commotion was registered at the Tour St. Jacques; but, instead of marking an increase of pressure, the trace showed a depression of 6 mm., and of very short duration."

PREHISTORIC EUROPEAN ART.

IT is important to determine how far culture can independently arise in a given district, and how far it is dependent upon other centres of civilisation. For many years M. Salomon Reinach has devoted himself to these problems, especially in reference to the culture of prehistoric Europe. In his essays on "Le Mirage Orientale" he opposed the very prevalent idea that all our culture necessarily came from the East, and during the last three years he has contributed to *L'Anthropologie* a series of articles on "Sculpture in Europe before the Greco-Roman Influences." This long series of papers is concluded in the current number (No. 2, vol. vii.) of that journal, and it forms a mine of information which cannot but prove of immense value to archæological students, especially as it is illustrated with 441 outline sketches culled from a vast array of authors. His general thesis comprises two arguments—the one negative, the other positive.

(1) M. Reinach tries to prove that the most primitive European artistic remains are far from justifying the view that the first models and tentative efforts came from Egypt or Babylon. One cannot trace any imitation of Assyrian cylinders or of Egyptian funereal figurines. The fauna figured by the rude artists of Europe is purely European; there is no lion, panther, or camel. An apparently very grave difficulty occurs in the series of figures representing nude females, which authors agree in regarding as imitations of the Babylonian Astarte. M. Reinach argues that this type was indigenous, and so far from owing its existence to Babylonian influence, it, on the contrary, worked its way, in all probability, towards the valleys of the Euphrates and Tigris. He thinks that Europe (*i.e.* the Balkan Peninsula, the Archipelago, the Caucasus, and the west coast of Asia Minor) only later, and to a restricted degree, became dependent upon the old civilisations of the Orient. In his opinion culture is polygamist. He admits multiple centres of creation for art, and refuses to believe that all illumination has come to us from the Euphrates and the Nile. He thinks that the Danube and the Rhine have some rights which should not be neglected, and that the future barbarians who dwelt along the borders of these rivers were not reduced to receive everything from without.

(2) M. Reinach recognises that it is not sufficient to affirm that art can be born in diverse places, and that the germ has not arisen from two or three privileged centres of the ancient world; and so he sets himself to show how the rudiment of art has been able to arise, even among peoples whose genius was for a long time in abeyance. To that purpose M. Reinach has "insisted on the evolution of the most simple decorative motives which, at a certain point, quite naturally suggested the idea of the human or animal form. In these not very numerous cases one can follow the transformations of a plastic motive down to the entirely geometric figure from which it arose. But the taste for geometric forms and the tendency to conventionalisation (*stylisation*), that is to say, to the purely decorative modification of organic lines, have been, for long centuries, so powerful in Europe, that even foreign types have not escaped their petrifying action. *A fortiori*, the indigenous types, arisen from geometrical devices, have always been constrained to return back to them again. It is not denied that in Europe, as elsewhere, the imitation of surrounding nature has given origin to some plastic attempts; but there is proof that this inspiration drawn from nature has been feeble, even in the imitation of animal forms, which represented only a very small number of the animals known to the people."

The author admits that several statuettes figured in this memoir reflect outside influences, particularly of Italy, where Ionian art early took root. But these influences were not exercised in an immediate manner, and the indigenous style appears to have always been predominant even when brought face to face with foreign objects. A similar phenomenon is noticeable in Italy itself, which was Hellenised very slowly, and was only partially Orientalised under the Roman empire.

Such is an outline of M. Reinach's position. There is no doubt that it will open up a wide discussion, as he covers a great deal of ground, and deals with some matters which admit of diversity of opinion.

M. Reinach, in an earlier section of his memoir (*L'Anth.* v., 1894, p. 305), definitely states that "in the primitive art of Central Europe the geometric form (a triangle) has suggested the anthropomorphic form, and it is not the anthropomorphic figure which is degenerated into the geometric." Possibly some, at all events, of these flat plates had indications of features painted on their surface, and thus they may have been more realistic than now appears, and later they were made more human-like as the fabricators became more skilled, or as they valued greater realism.

The investigations of quite a number of men of science show that so-called "geometric" designs are often really highly conventionalised representations of natural objects, mainly of animals; others are suggestions of textiles, or other handicrafts. Probably relatively few "geometric" designs are purely meaningless decorations. So far as available evidence goes, there are not many (if any) examples of the evolution of human or animal forms by "suggestion" from purely geometric designs, but the reverse process is extremely common. Doubtless some of the problems involved in this memoir will be fully discussed at the forthcoming meeting of the British Association at Liverpool during the great discussion, which has been arranged for, on the culture and origins of the Mediterranean race. We understand that M. Reinach intends to be present on this occasion, when he will be able to state his views and reply to his critics.

NOTES.

THE seventh annual general meeting of the Federated Institution of Mining Engineers began, with a good attendance, at Cardiff on Tuesday last, under the presidency of Mr. G. A. Mitchell. The report of the Council showed satisfactory progress. It was announced that Mr. Lindsay Wood has been elected President of the Institution.

THE third annual congress of Sunday Societies is announced to take place at Newcastle-on-Tyne, on October 10 and two following days. Copies of the programme of proceedings may be had of the Honorary Secretary, Mr. Mark H. Judge, 7 Pall Mall, S.W.

A REUTER dispatch from Naples says the death is announced of Senator Palmieri, Director of the Vesuvius Observatory. Luigi Palmieri was born in 1807. He was successively Professor of Mathematics at Salerno, Campobasso, and Avellino, Professor of Physics at the Royal Naval School at Naples, and Professor at the University in the same town. In 1854 he was appointed Director of the Vesuvius Meteorological Observatory. He was inventor of several instruments for the observation of natural phenomena, including an electrometer for ascertaining the amount of electricity in the atmosphere, a rain gauge, and a seismometer.

PROF. J. C. BOSE, of the Presidency College, Calcutta, is at present in this country, having been deputed by the Indian Government to visit the various laboratories in Great Britain and on the continent, with a view to the extension of the Calcutta Presidency College Laboratory, and the establishment of a new magnetic observatory in connection with that College. Prof. Bose is the holder of a Royal Society grant for researches in regard to electricity. He is a D.Sc. of London University.

IT was announced at a banquet given to Dr. Nansen at Christiania, on Thursday last, that a Nansen fund had been formed for the advancement of science. Subscriptions to the amount of 210,000 kroners had already been received.

THE Russian Geographical Society has been asked by the Governor-General of Turkestan to send some men of science to Shignan and Roshan next summer, for the purpose of making a thorough exploration of those regions.

M. MOUREAUX, who has just returned from Russia, has made observations of some quite surprising magnetical perturbations. On August 29, special perturbations were observed by him of the same kind that are generally registered when connected with earthquakes. He remained several days supposing that he had been mistaken, when he learned through a steamer which arrived that Hecla had been in eruption on that same night. The exact times of occurrence of these perturbations were 11h. 36m., 11h. 42m., 11h. 46m. p.m. Paris mean time.

PROF. H. MOHN informs us that Captain Salvesen, Royal Norwegian Navy, commanding the sloop-of-war *Ellida*, on July 28, when off the promontory of Stat, on the west coast of Norway, saw the "blue sun" at sunset. The phenomenon was seen twice, the ship being lifted on the waves, with an interval of a few seconds of time. The sun was quite clear at setting. It is curious that this beautiful sight is so rarely looked for.

IT is reported that the War Department of the United States has sent to Paris for a set of the Bertillon instruments, and that a thorough examination into the system of identification is to be made with a view to its introduction into the United States Army.

THE *Evening Post* of New York learns that Prof. C. W. Dodge, of the Biological Department of the University of Rochester, has asked the trustees to make an appropriation for the establishment of a biological laboratory at Hemlock Lake, a small lake thirty miles south of Rochester, from which the city obtains its water-supply. Prof. Dodge proposes to make, with the assistance of students from his department, a complete biological survey of the lake.

PROF. A. HALL, JUN., Director of the University of Michigan Observatory, according to *Popular Astronomy*, has secured an extensive series of observations of Polaris for latitude variation. He is also engaged on the division errors of the meridian circle, no examination of the errors having been made for some considerable time.

MR. E. H. PARKER, who has been for the past fifteen years in the experimental department of Messrs. Wm. Denny and Bros., Leven Ship-yards, has been appointed Secretary to the Institution of Engineers and Shipbuilders in Scotland, in the place of Mr. W. D. Millar, who is retiring after twenty-five years' service.

WE have received from Colonel A. T. Fraser, R.E. (retired list), two radiographs, one of a European, and the other of a Hindu hand, taken by means of Röntgen rays under precisely similar conditions. Colonel Fraser is of opinion that the evident difference in appearance suggests that the skin pigment of the hand of the Hindu intercepts the rays.

THE Society of Medical Phonographers, to which we have referred on former occasions, has made steady progress during the past year, and now has 250 names on its books. The Society issues a monthly medical periodical, entitled the *Record*, in lithographed shorthand; in addition to this publication it has brought out two small pamphlets dealing with the use of shorthand by the student and by the practitioner respectively, and has issued a list of more than 2500 phonographic outlines of medical terms. The Society intends, at the end of October or the beginning of November, to hold an examination in shorthand for students of medicine commencing their first winter session. Prizes will be given for proficiency in the art.

A LIST of free popular lectures to be delivered in the Chemical Theatre of Owens College, Manchester, on Saturday afternoons during the session, has been sent us. On October 24 will be begun the first of three discourses on "The Geological History of the District round Manchester," by Prof. Boyd Dawkins, and on subsequent dates the following lectures will be given:—"The Inhabitants of the Seas," by Prof. Hickson; "Economic Botany," by Prof. Weiss; "Soils, their Nature and Origin," by Dr. Burghardt; "Birds," by Mr. Hoyle. In addition to these lectures, others of a popular character will be delivered on Monday evenings during the session. In the list we notice one by the Archdeacon of Manchester, on "Falling Stars as a Branch of Astronomy"; one on "The Electric Furnace," by Prof. Roberts-Austen; and two, by Prof. H. B. Dixon, on "The Nature of Flame."

THE *Pioneer Mail* (Allahabad) of August 19 contains an account of the proceedings at the last meeting of the Central Committee of the Pasteur Institute of India. At this meeting it was unanimously decided "that the scope of the Institute as embodied in the extended scheme laid before the meeting be accepted and published." The scheme in question is as follows: I. The practical application of bacteriological methods to the prevention and cure of disease, viz.: (*a*) Inoculations against rabies. (*b*) Preparation and preservation of cholera vaccines for distribution when necessary, and the carrying out of anti-cholera inoculations. (*c*) Preparation of diphtheria anti-toxin. (*d*) Preparation of anthrax vaccine. (*e*) Preparation of tuberculin (for diagnostic purposes). (*f*) Preparation of mallein (for diagnostic purposes). (*g*) Vaccination against tetanus. II. The investigation of tropical diseases especially prevalent in India; that is to say: (*a*) Research intended to generalise methods already in use, and to test the actual value of proposed methods, namely: (1) Vaccination against enteric fever. (2) The use of *anti-venene* in snake-bit. (3) The curative treatment of cholera. (*b*) The investigation of the following diseases: malaria, kala azar, dysentery, abscess of the liver, beri beri, &c. (*c*) Fermentations, including indigo, opium, tea. III. The provision of a centre which would afford to medical officers, already trained in bacteriological technique, the means for the prosecution of independent research, and for the acquisition of advanced knowledge of bacteriological methods of dealing with disease, under the guidance and supervision of the officers of the Institute. The selection of the site for the Institute has yet to be made.

WE are glad to hear that the Crystal Palace Company are about to arrange for a series of entertainments and lectures during the ensuing autumn and winter months, to be given every Wednesday evening. The lectures will be devoted to the exemplification of the various great discoveries and inventions of the Victorian era, and will be delivered by eminent men of science. We wish the Crystal Palace every success in this venture, and hope that the Company's example may be followed by others. The last half-century, perhaps, holds the record for the greatest advancement in science during a period of this length, so that the lectures will have a broad basis from which to draw their material.

VERY little doubt now exists as to the value of a captive balloon for reconnoitring purposes; and its importance has been lately displayed during the recent manœuvres. The military correspondent of the *Pall Mall Gazette* gives an interesting account of this special detachment; it consists of three officers and a dozen sappers. The balloon can lift 2½ cwt. The apparatus consists of a cart drawn by four horses, with two drums or winches, and round them is the hawser of twisted strands of wire which anchors the balloon. The balloon is generally allowed to ascend 1000 feet, and this is done by unwinding the wire. Messages are sent down in small bags fixed loosely on the hawser, and the officer at the bottom is either connected by wire with the General's headquarters, or has mounted orderlies at his disposal. A simple and rapid means is adopted for bringing the balloon to earth. A stout pole, 10 feet long, is laid on the wire, and a couple of sappers take hold of each side, and double along, pressing on the pole all the time. The balloon is then made to come to earth in about two minutes; of course, some distance from the waggon. To let it up again, they double back, keeping the pole of the waggon horizontal; this system naturally saves much time and winding. To move the balloon from place to place, it is pulled down until it is on the top of the waggon, where it is held while the waggon is being driven along. The value of a balloon, the correspondent says, can hardly be over-estimated, both for reconnoitring the enemy and also as a means of keeping a General informed of the positions reached by his own troops. Sketches showing accurately all the enemy's dispositions can be thus easily obtained, which would otherwise have to be done by mounted troops, and, perhaps, not so thoroughly.

CONSIDERABLE danger appears to attend the consumption of the popular Norwegian cheese known as "Pult-ost" or "Knad-ost," in consequence of the vigorous kneading which it undergoes in process of manufacture. Several authentic instances of severe attacks of intestinal catarrh having followed the eating of this particular variety of cheese, attention has at last been directed to the subject, and an elaborate investigation has lately been carried out by Dr. Axel Holst, of Christiania. The bacteriology of the cheese in question has been specially studied, and elaborate examinations were made of those cheeses to which the above epidemic was attributed. The results obtained are of considerable interest; for not only has Dr. Holst isolated out the responsible microbe, but he has identified it as being a virulent variety of the *B. coli communis*. Thus fresh evidence is to hand in support of the now frequently expressed view that this microbe, so extensively present in our surroundings, and normally present in the animal system as a harmlesss saprophyte, may by some process, at present unknown to us, become endowed with highly toxic properties. Dr. Holst suggests that the original infection of the milk may have been brought about by want of cleanliness in milking, coupled with an unhealthy condition of the cow itself—circumstances which have already been proved to have induced diarrhœa in the case of persons who consumed such contaminated milk.

DR. C. HART MERRIAM, of the U.S. Department of Agriculture, has prepared a synopsis of the weasels of North America, which has just been issued from the Government printing office. Dr. Merriam recognises one ferret and twenty-two weasels, as being at present known in North America, and refers the former to the sub-genus *Putorius*, and the latter to the sub-genus *Ictis* of the same genus. Eleven species of North American weasels are now described as new for the first time. Five plates are added to this excellent memoir to illustrate the skulls and dentition of the various species.

FROM a memoir lately presented to the Imperial Academy of Sciences of St. Petersburg by Herr Eug. Büchner, it would appear that the European bison, in spite of the stringent efforts made by the Czars since the beginning of the present century for its protection, is likely to share the fate of its American relative, and to become extinct as a wild animal. The celebrated herd of the forest of Bjelowjesha, in Lithuania, which in 1856 was nearly 1900 in number, has of late years become reduced to under 500, and shows no signs of increase. The chief cause of this failing is attributed, by Herr Büchner, to "breeding in," in consequence of the confined area to which these huge animals are now restricted. Another reason is, no doubt, the fact that the male bisons considerably exceed the females in number. We venture to suggest that it would be wise to remove a large number of bisons of the male sex from the forest, and, if possible, to introduce a change of blood from the second herd of the same animal which still exists on the northern slopes of the Caucasus.

A VERY interesting feature of primary education in Russia is the establishment and rapid development of small farms, orchards, and kitchen-gardens in connection with many primary schools, especially in the villages. The land for such model gardens, or farms on a small scale, was mostly obtained through free grants from the village communes and, occasionally, from the neighbouring landlords; while the expenses are covered by very small money grants from the country and district Councils (*zemstvos*). To take one province in South Russia, namely Ekaterinoslav, we see from the biennial report, just issued, that not only has almost every school an orchard and kitchen-garden for the use of the schoolmaster, but that nearly one-half of the schools in the province (227 out of 504) are already in possession of small model kitchen-gardens, orchards, tree-plantations, or farms, at which gardening, sylviculture, and sericulture are regularly taught. The teaching is mostly given by the schoolmasters, who themselves receive instruction in these respective branches at courses voluntarily attended in the summer, or occasionally by some practical specialist of the neighbourhood. The province of Ekaterinoslav being mostly treeless, special attention is given to tree plantations and, next, to silkworm culture. The aggregate area of the 227 school-farms or gardens attains 283 acres, and they contained, in 1895, 111,000 fruit trees and 238,300 planted forest trees; nearly 14,000 of the former and 42,000 of the latter having been distributed free among the pupils during the same year. The money grants for these 227 gardens were very small—*i.e.* a little over three hundred pounds (£314). Besides, over a thousand beehives are kept, partly by the schoolmasters and partly by the children; and some schools had vineyards in connection with them. This movement has widely spread over different provinces of Central Russia, where the culture of cereals dominates at the school farms; while in Caucasia attention is especially given to the silkworm culture and the culture of the vine.

THE following particulars of munificent gifts and bequests to libraries of America are gathered from *Science*:—The New York Free Library, from members of the Astor family, about £330,000; from James Lennox, £147,000, in addition to books and land; from the Tilden estate, £400,000; the John Crerar Library, of Chicago, from the founder, about £540,000; the Newberry Library, of Chicago, from the founder, about £500,000; the Carnegie Library, of Pittsburg, from the founder, £420,000; the Enoch Pratt Free Library, of Baltimore, from the founder, about £216,000; the Library Company, of Philadelphia, from the founder, Dr. Rush, about £212,000; the Library of Columbia University, from President Low, £200,000.

THE first article in the September part of the *Geological Magazine* is devoted to an historical account of the Palæontographical Society of London, the jubilee of which was celebrated on June 19 last. The origin of the Society was mainly due to the prior issue of Sowerby's "Mineral Conchology," of which the first part appeared in June 1812, and was followed by other parts for over thirty years. The portions of this work were brought out slowly and irregularly, and rarely illustrated more than ten species at one time, and it was thought that as the "Mineral Conchology," at its then rate of issue, could not possibly depict all the British fossils within a moderate period, it would be well to have recourse to another method. The outcome of the suggestion made was the calling together of a meeting on March 23, 1847, at the apartments of the Geological Society, with Sir Henry De la Beche in the chair, when it was resolved that a Society be constituted, the object of which should be "to figure and describe as completely as possible a stratigraphical series of British fossils." The meeting further determined that the annual subscription should be one guinea, that the name of the Society should be the Palæontographical, and that its officers should consist of a president, treasurer, secretary, and council of sixteen members. Sir Henry De la Beche was elected first president. The presidents from the foundation to the present have been: Sir H. De la Beche, from 1847 to 1855; Mr. W. J. Hamilton, from 1856 to 1867; Dr. Bowerbank, from 1868 to 1876; Sir R. Owen, from 1877 to 1892; Prof. Huxley, from 1893 to 1895; and since then Dr. Henry Woodward. Want of space will not permit of our giving a list of the monographs issued by the Society; suffice it to say that they range over a large area of information comprehending the fossil Plantæ, &c., fossils from the sub-kingdoms Protozoa, Porifera, Cœlenterata, Echinodermata, Annulosa, Mollusca, and Vertebrata; and that monographs are in progress on the Foraminifera of the Crag, the Fossil Sponges, the Cretaceous Star-Fishes, the Carboniferous Mollusca, the Inferior Oolite Ammonites, the Fishes of the Old Red Sandstone, the Pleistocene Mammalia, and the Devonian Fauna. The Honorary Secretary of the Society, Prof. Wiltshire, will, we are sure, be glad to receive the names and subscriptions of many new members.

IT may be remembered that some time ago the Austrian man-of-war *Pola* returned from her voyage of investigation in the Red Sea, after having spent eight months there, and surveyed the northern half of this region, covering an area of about 600 nautical miles long by 180 broad. An account of the work accomplished during this trip is given in *Die Natur* (No. 37), and seems to be of great importance. No less than seventy boxes, containing fish and smaller Seetiere, and twelve large boxes full of coral have already been despatched to Vienna. Other results of observation tell us that at a depth of 500 metres the water commences to become homogeneously warm, having a temperature to the bottom of 21°·2. The amount of salt at the time of observation was greatest in the northern part, diminishing towards the south; the transparency of the water was found to be less than that of the Mediterranean Sea; and the colour was not so fine and of such a distinct blue as is the case of the Mediterranean and Adriatic Seas. Altogether 1243 temperature observations, 691 determinations of the specific gravity at the surface, half-way down, and at the bottom, 254 colour observations, and 22 determinations of wave-elements were made. The investigation included further innumerable chemical analyses of the water from the deeper parts, and observations of the chemical changes taking place between the Red Sea and the land surfaces. At most of the harbours and places of anchorage the officers made astronomical position and time determinations, magnetic observations for all three elements—declination, inclination, and intensity, and pendulum observations for the determination of the force of gravity. The above were made at twenty-seven stations on land and islands, twelve being on the Egyptian coast, ten on the Arabian, and the rest on the half-island Sinai. Meteorological observations were also strictly made, thus completing a valuable amount of work in an important region.

THE current number of *La Nature* (September 12) has some specially interesting articles. M. de Navaillac gives us an account of some of the prehistoric finds that have been made in Florida, referring to the work done especially by Mr. Frank Cushing, who was sent out by the University of Pennsylvania. His researches seem to have been very successful, and he was rewarded with sufficient material to permit him to describe the life and costumes of the race that had peopled the land. Dr. Felix Regnault discourses on the origin of ornamental art: the principles which actually guide ornamental art date neither from the Renaissance, nor even from the Greek period. They result "d'une tendance naturelle à l'homme telle qu'on retrouve dans les origines mêmes de l'humanité." "Renaissance Clocks" is the subject of an article by M. Planchon, who describes some of these beautiful works of art. There are several illustrations showing the different methods of design adopted.

THE *Bulletin de la Société d'Encouragement pour l'industrie Nationale* for the month of August contains various articles which should be read with interest. M. Ronna, in a long summary of sixty-four pages, gives an account of the dry regions in the United States of America, and describes at some length the different methods of irrigation employed to suit the various local conditions. Plans, cross-sections and photogravures are given to illustrate the regions under discussion, and these give us a good idea of the enormous scale on which some of the undertakings are made. The first part deals chiefly with the distribution of water, by the formation of reservoirs, and the subsequent building of canals. The question of wind and steam pumps then passes under review; here all kinds of types are mentioned, including an account of some of the more important artesian wells. Then follows the different systems adopted for actually distributing the water over areas, such as, for instance, a plantation; these vary according to the amount of water required. The statistics brought together show the enormous increase in the productive value of the land since the adoption of irrigation on a large scale. Under the heading of "Metallurgy," Roberts-Austen's and F. Osmond's researches on the structure of metals are translated.

IN the current number of the *Annales de Chim. et de Phys.*, M. Moissan gives an interesting account of his experiments on the volatilisation of refractory substances in the electric furnace. The sublimates were condensed on the outside of a curved copper tube placed two centimetres below the arc, and just above the substance under examination. A rapid current of water was passed through the tube, and kept it cool during the experiments, which usually lasted for about five minutes. The volatilised metals were copper, silver, platinum, aluminium, tin, gold, manganese, iron, and uranium. Quantitative experiments were not made in every case, but it appeared that manganese was sublimed more rapidly than the others, and that the rate of volatilisation of copper was about five times as rapid as that of gold. The condensed metal was usually, in great part, in the form of little spheres. Silicon and carbon were also volatilsed and condensed on the tube, though the amount collected of the last-named element was very small, and lime, magnesia, zirconia and silica were sublimed without difficulty. M. Moissan draws the conclusion that the most stable compounds hitherto known disappear in the electric furnace, being either decomposed or volatilised. Nothing resists these high temperatures except the series of perfectly crystallised compounds discovered by him, and consisting of borides, silicides, and, above all, carbides of the metals. M. Moissan intends to publish a description of these compounds shortly. He regards them as being probably among the original constituents of the globe, and as still existing in some of the stars.

THE earliest recorded measurements of the "dip" of the earth's magnetism were made in London by Robert Norman in the year 1576, and by Gilbert in 1600; but it was not until 1671 that this element formed the subject of a series of regular observations at Paris, indicating a continual diminution during the last two centuries from 75° to 65° 5′. In endeavouring to trace the secular variation of the dip, it is important to obtain, if possible, data extending over a far longer period. In a highly suggestive paper published in the *Atti dei Lincei*, Dr. G. Folgheraiter, taking as his starting-point the well-known property possessed by clay after it has been baked of retaining permanently any magnetisation that may have been induced in it during the process of baking, advances the view that the various objects of terra-cotta discovered in excavations (vases, bricks, &c.) afford an indelible record of the state of the earth's magnetism at the epoch of their fabrication. The author, besides citing the observations of a number of physicists in support of his view, has put the matter to a practical test by examining the magnetisation of the bricks used in the construction of ancient villas, tombs, &c., at the time of the Roman Empire, of which the remains abound in Rome and the Campagna. It was found that the direction of magnetisation varied from brick to brick, some in the course of building having been laid with their axes of magnetisation in the opposite direction to the earth's magnetic force, some with their axes in the same direction, while others were magnetised normally to that direction; in no case did the axis of magnetisation correspond to any fixed direction, thus proving that the bricks had retained their polarity unaffected by terrestrial magnetism during the many centuries that have elapsed since the buildings were constructed. An examination of some Etruscan vases, dating from the eighth century B.C., leads to similar conclusions. In a tomb recently discovered at Narce (now Calcata), one of two vases was found magnetised in a nearly horizontal direction, the other exhibited a decided south pole at the bottom, and a north pole at the top, while two large *crateræ* had their north poles in the centre of the base, and their south poles in the orifice at the top. In a tomb at Falerii, two vases were found having the south pole in the centre of the base, while one "oinochoë" (wine measure), accompanying them, had the north pole at the upper extremity of its beak. From such evidence Dr. Folgheraiter considers himself justified in asserting with certainty that the direction of magnetisation observed in antique objects of terra-cotta is that due to the inducing effect of the earth's magnetism during the process of baking. In this, his first paper, the author draws no inferences relating to the earth's magnetism, but he points out a difficulty arises in most instances, owing to our uncertainty as to the orientation of the objects when originally placed in the kiln, a factor which must evidently be known before any definite conclusions can be stated.

The August number of the *Proceedings* of the Geologists' Association contains a paper by Dr. Hicks on the Palæozoic Rocks of West Somerset and North Devon, in which are some original illustrations of the remarkable folds in the rocks of the Ilfracombe district. This is followed by a preliminary Synopsis of the Fauna of the Pickwell Down, Baggy, and Pilton Beds, by the Rev. G. F. Whidborne, in which brief descriptions of some seventy-four new species are included. The Rev. H. H. Winwood contributes notes on the Trias, Rhætic and Lias of West Somerset. These three papers have already been issued as the usual Long Excursion pamphlet. In addition the number contains a paper by Mr. A. E. Salter on the "Pebbly Gravel" of South-east England, and the relation of its distribution to the gaps in the present line of high-ground between Goring and the Norfolk coast; and one, by Mr. Strahan, on the physical geology of Purbeck and the relations of the anticlines to the watersheds in the south and south-east of England.

The recent number of the *Proceedings* of the Liverpool Geological Society (vol. vii., part iv., dated 1896 only) contains an important presidential address by Mr. Mellard Reade, on British Geology in relation to Earth-Folding and Faulting; while a contribution to the same subject, in respect of the Craven district, is made by the Rev. F. F. Grensted. Among other papers of more than local interest we may mention Mr. Beasley's Attempt to classify the Footprints from the Trias of the district; Mr. Mellard Reade's Notes on the Drift of Mid-Wales; Mr. Lomas's Observations on Recent Glacial Striæ in Switzerland; and Dr. Callaway's Sketch of the Process of Metamorphism in the Malvern Crystallines.

Science for September 4 contains a lengthy appreciative article on Dr. P. L. Sclater, F.R.S., from the pen of Dr. G. Brown Goode.

The Annual Report of the Keeper of the Manchester Museum has reached us, and is of a very encouraging character. During the year the Museum was recognised in a practical manner by the City Council as a public institution, for on October 16, 1895, a resolution was passed at a meeting of the Council that the sum of £400 a year should be granted to the Manchester Museum from the Free Library Rate. In November the experiment of opening the Museum for two hours on Sunday afternoons was first made. On the opening day, November 17, 494 persons attended. Since that date the attendance has varied from 131 to 797, the average being 519. During the year the Museum has received a large number of gifts from individuals and institutions.

Vol. xxviii. of the *Transactions and Proceedings of the New Zealand Institute* (published in this country by Messrs. Kegan Paul and Co., Ltd.) is a bulky volume of 787 pages, and contains seventy-four articles classified as miscellaneous, or relating to zoology, botany, geology, and chemistry. In addition to these, reports of the proceedings of the incorporated societies are given, and the whole is enriched by thirty-seven well-executed plates.

The Annual Report of the Calcutta Botanic Gardens, issued by the Superintendent, Dr. G. King, shows steady work and increase in efficiency in the various departments, notwithstanding the severe injury inflicted by the unusual drought of the summer months (October to March). The work of the herbarium has been carried on with vigour, a very large number of specimens have been added to it, while named specimens of Indian plants have been forwarded to various scientific institutions throughout the world.

The *Botanical Gazette* records the establishment of a Biological Survey by the Department of Agriculture, under a recent Act of Congress of the United States, which it regards as the beginning of a new era in the botanical field-work of the States. The head of the new Survey will be Dr. Merriam, who has had great experience in the kind of work which it proposes to undertake.

The corner-stones of the Hull Biological Laboratory of the University of Chicago were laid in July last. The Botanical Hall is expected to be finished by the spring of 1897, and, if we may judge from a sketch in the *Botanical Gazette*, will be a very imposing structure.

Vol. vi. part ii. of "Flora Capensis: being a Systematic Description of the Plants of the Cape Colony, Caffraria, and Port Natal (and neighbouring territories)," by various botanists, and edited by Mr. W. T. Thiselton-Dyer, is almost ready for publication by Messrs. L. Reeve and Co. Like part 1 of vol. vi., the present contribution is the work of Mr. J. G. Baker, the keeper of the Herbarium and Library of the Royal Gardens, Kew, and contains the continuation of the *Amaryllideæ* and part of the *Liliaceæ*, to the completion of which the whole of the third and concluding part will be devoted.

Messrs. Rivington, Percival, and Co. will publish shortly, "Mechanics for Beginners treated Experimentally, embracing Statics, Dynamics and Hydrostatics," by L. Cumming, of Rugby School.

Messrs. Henry Holt and Co., New York, hope to issue at an early date a translation, by Prof. G. W. Field, of Brown University, of the first or "general" part of Dr. Hertwig's "Lehrbuch der Zoologie."

A NEW edition of Dr. Oliver Lodge's "Elementary Mechanics, including Hydrostatics and Pneumatics" has just reached us from Messrs. W. and R. Chambers, Ltd. It has been completely revised by the author and by Prof. Alfred Lodge.

MESSRS. TAYLOR BROTHERS, Leeds, have sent us the second edition of "The Collector's Manual of British Land and Freshwater Shells," by L. E. Adams. The preface states that the book has been re-written and brought up to date.

THE additions to the Zoological Society's Gardens during the past week include two Bonnet Monkeys (*Macacus sinicus*, ♂ ♀) from India, presented respectively by Mr. John Hart and Mr. E. E. Hodgskins; a Rhesus Monkey (*Macacus rhesus*, ♀) from India, presented by Mr. Frederick Tomlin; a Mozambique (*Cercopithecus pygerythrus*, ♂) from South-east Africa, presented by Mr. A. C. Jackson; two Lanner Falcons (*Falco lanarius*), South European, presented by Mr. W. Glynes Bruty; a Glaucous Gull (*Larus glaucus*) from Franz Josef Land, presented by the Jackson-Harmsworth Polar Expedition; a Raven (*Corvus corax*), British, presented by Mr. O. L. Pegler; an Egyptian Jerboa (*Dipus ægyptius*) from North Africa, a Rat-tailed Serpent (*Trigonocephalus lanceolatus*) from St. Lucia, W.I., deposited; a Diana Monkey (*Cercopithecus diana*, ♀) from West Africa, three Capœira Partridges (*Odontophorus dentatus*) from Brazil, purchased; a Red Deer (*Cervus elaphus*, ♀) from Scotland, received in exchange; two Triangular-spotted Pigeons (*Columba guinea*), a White-backed Pigeon (*Columba leuconota*), two Half-collared Doves (*Turtur semitorquatus*) bred in the Gardens.

OUR ASTRONOMICAL COLUMN.

THE RECENT SOLAR ECLIPSE.—M. Tisserand furnishes a few details on the results obtained by the Russian astronomers during the eclipse of August last, which were communicated to him through M. Backlund, Director of the Observatory of Pulkowa. M. Backlund's station was situated in Novaya Zemlya, where he landed three weeks before the day of the eclipse. During this period the sky remained constantly cloudy, the temperature varying from 0° to 3° C. During some occasionally bright moments altitudes of the sun were obtained to check their chronometers and determine their rates. M. Galitzine made a series of magnetic observations. At four o'clock on the morning of the eclipse the sky was still overcast, but the weather cleared up somewhat, and the observers were able to observe the four contacts under good conditions. Clouds, however, were not entirely absent; but successful observations and photographs of the corona were taken.

M. Eugène-M. Antoniadi, in the September number of the *Bulletin de la Société Astronomique de France*, gives an account of his trip in the *Norse King* to Vädso. The article in question is illustrated, and contains, among others, a drawing of the region in and about Vadsö, and an excellent photogravure of the town of Hammerfest.

COMET BROOKS.—A Centralstelle Circular, dated September 10, gives an ephemeris, with elements, of this comet computed by Prof. E. Lamp from observations made on September 7, 8, and 9. They are as follows:—

Elements.

$$\begin{array}{rcl} T &=& 1896 \text{ July } 7\cdot278 \text{ Berlin M.T.} \end{array}$$

$$\left.\begin{array}{rcl} \omega &=& 38^\circ\ 22' \\ \Omega &=& 149^\circ\ 22' \\ i &=& 88^\circ\ 16' \end{array}\right\} 1896\cdot0$$

$$\log q = 0\cdot06497.$$

Ephemeris 12*h*. *Berlin M.T.*

1896.	α h. m.	δ ° ′	log Δ	B.
Sept. 16	14 55·9	+53 15	0·2405	0·9
20	15 21·0	51 53	0·2428	0·8
24	15 44·7	50 16	0·2463	0·8
28	16 6·9	48 26	0·2512	0·7
Oct. 2	16 27·6	46 29	0·2574	0·7
6	16 46·7	44 25	0·2650	0·6

The unit of brightness occurred on September 4.

COMET GIACOBINI.—A circular from Kiel, dated September 9, gives the elements and ephemeris of this comet calculated by Dr. H. Kreutz from observations on September 5, 6, and 7.

Elements.

$$T = 1896 \text{ October } 8\cdot003 \text{ Berlin M.T.}$$

$$\left.\begin{array}{rcl} \omega &=& 155^\circ\ \ 2'\cdot1 \\ \Omega &=& 195^\circ\ 39'\cdot5 \\ i &=& 8^\circ\ 45'\cdot2 \end{array}\right\} 1896\cdot0$$

$$\log q = 0\cdot04004$$

These elements are stated to be somewhat uncertain. The orbit is probably an ellipse.

Ephemeris 12*h*. *Berlin M.T.*

1896.	α h. m.	δ ° ′	log Δ	B.
Sept. 7	17 16·5	− 8 0	9·785	1·1
11	17 25·1	− 8 41	9·772	1·2
15	17 35·0	− 9 24	9·757	1·3
19	17 46·4	−10 10	9·742	1·4
23	17 59·3	−10 58	9·050	1·6
27	18 13·9	−11 47	9·709	1·8

NEW FEATURE ON MARS.—With reference to the recent observation of bright light on the terminator of Mars, referred to on September 3, we may state that the bright prominences (mountains?) on the terminator of Mars were first seen by the astronomers of the Lick Observatory in 1890, and have been regularly observed (measured) at subsequent oppositions by the observers at Mount Hamilton, Nice, and Flagstaff.

Prof. Hussey observed their first appearance in 1896 on August 28, 0h. 45m. Greenwich mean time, in the *Chersonesus* region of Mars.

UNIVERSITY AND EDUCATIONAL INTELLIGENCE.

IT is announced that a sum of between £15,000 and £17,000 is to be spent in providing buildings and fixtures for the Sunderland Technical College.

AMONG recent appointments we notice the following:—Mr. Lake becomes Principal of the Technical and University Extension College, Colchester; and Mr. J. W. B. Adams, Head-master of the Tenby and Intermediate and Technical Schools.

MR. A. M. DRENNAN, of the Burnley Grammar School, has been appointed Head-master of the Banbury Municipal Secondary and Technical School.

AMONG recent appointments abroad may be mentioned:—Prof. W. Dames to succeed the late Prof. Beyrich in the chair of Geology and Palæontology at Berlin; and Dr. W. Wien, to be Associate Professor of Physics at Berlin.

THE Chemical Laboratory of the University of Illinois has been destroyed by fire. It is reported to have been one of the largest and best-appointed of its kind in the country, and was erected at a cost of about £8000. Its fittings, apparatus, &c., are said to have added to this amount about £7000.

THE Syllabus of the Municipal Technical School and Municipal School of Art, Manchester, for the forthcoming session is now ready. It is issued by Mr. John Heywood, Manchester. The Calendar for the twelfth session of the Merchant Venturers' Technical College, Bristol, is also ready, and may be had, at a small charge, of Mr. H. Y. Hill, Bristol. We have also had sent to us the prospectus of day and evening classes to be conducted at the Battersea Polytechnic Institute. Copies may be obtained on application to the Secretary.

THE fifth annual report of the Department of Agriculture of the Yorkshire College, Leeds, is a record betokening much activity. Most of the lecture courses appear to have been well attended, though in the teachers' agricultural classes the attendance fell off so considerably that it was found impossible to hold a summer vacation course. In the winter courses the same difficulty was experienced, and though attempts were made to form classes at five centres, it was only possible to obtain sufficient students to form one class. At the request of the West Riding County Council, the department formulated a scheme for the institution of gardens for instruction in horticulture in connection with evening continuation schools. The scheme has been adopted by the West Riding County Council, and grants have been promised by them provided certain regulations are complied with.